

Abstract of the Disclosure

A method and system that increases transmit diversity gain in a wireless communication system. The system includes a transmitter with 2^N transmit antennas, where N is greater than one, and a receiver with one or more receive antenna. The transmitter includes N stages connected serially to each other. The first stage is a symbol level space-time transmit diversity encoder. Each of the next $N-1$ stages is a block level space-time transmit diversity encoder, for a total of N stages. The last stage is connected to the 2^N antennas. The transmitter generates pairs of symbols in a form X_1 and X_2 . The pairs of symbols are encoded by the first stage to produce a $2^1 \times 2^1$ output matrix C . Then, in each next block level stage n , the $2^{n-1} \times 2^{n-1}$ output matrix of a previous stage is encoded to a $2^n \times 2^n$ output matrix, until a final output matrix has 2^N rows of transmit symbols. The transmit symbols of the final output matrix are fed, in a left-to-right order, for each row, in a top-to-bottom order, to a corresponding different one of the 2^N transmit antennas. A transmit weight is applied to each transmit symbol before transmitting the transmit symbol.